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of the book. Though hardly any explicit statements of the division of these nations into gentes is given by the ancient authors, numerous remarks indicate that these divisions existed. Each gens had its own chief, and owned a certain tract of land. In case of war, the whole army was divided according to gentes, each gens being commanded by its own chief. A further proof for this theory is found in the laws of inheritance and marriage, and in the terms of relationship. Every gens had even its own deities, temples, worship, and its separate myths. Brühl considers the great states of Mexico and Central and South America as confederations of tribes who subjected other neighboring tribes, whom they compelled to pay a tribute. Nowhere were states formed by uniform nations.

Die Erde in Karten und Bildern. Vienna, Hartleben. 4°.

THE publication under review is an atlas, accompanied by text and numerous illustrations. It belongs to a class of publications which unfortunately is still entirely wanting in America. Our atlases are expensive, gorgeously colored, and generally not well drawn, while there are a number of European atlases which are sold at a moderate price, the drawing of which meets all reasonable expectations, and which are tastefully colored. The present atlas belongs to this class, but its characteristic feature is the accompanying text. The illustrations are carefully compiled from works of travel, and represent characteristic views, animals, plants, and ethnological objects, and may be used to advantage in schools, as they convey a good idea of geographical phenomena to the reader. The text, so far as we can judge from the numbers that have reached us, is not intended to be of a scientific character, but it is a popular treatise on geography. First, physical geography is treated. This will be followed by a special part on the geography of the separate continents and countries, and the last part will treat of commercial geography. The maps are well drawn, and the lettering and the topography are clear. The physical features are distinct, as the maps are not crowded with names. This atlas shows how far German cartography is advanced as compared to our own. There is no American atlas that can compare to this cheap publication, or to the well-known 'Handatlas' by Andree. Even the large and costly maps which are published in our country do not meet the wants of geographers so well as the German publications. But there is little demand for good maps so far. So long as our teachers are content with the low class of text-books and maps which are used in most schools, publishers will be reluctant to attempt the publication of costly works of this kind: but as soon as there is a demand, good maps and good atlases will be forthcoming; for there is no absolute want of cartographers, as the publications of our government, particularly those of the Coast and Geological Surveys, show.

Comparative Morphology and Biology of the Fungi, Mycetozoa, and Bacteria. By A. DE BARY. Tr. by HENRY E. F. GARNSEY, and revised by ISAAC BAYLEY BALFOUR. Oxford: Clarendon Pr. 8°.

ONE sometimes feels that English translations of German works above the grade of comparatively elementary treatises are unnecessary, since all persons qualified to understand the subject are presumed to be able to read the original. The present translation, however, shows that this feeling is erroneous. The original work of De Bary appeared in 1884. We say original, because, although, in one sense, the work of 1884 is a second edition of the second volume of Hofmeister's 'Handbuch der physiologischen Botanik,' published in 1886, the treatment is so different, and our knowledge of the subject has widened so rapidly within the last twenty years, that there is not much resemblance between the two editions. The work of De Bary is so well and favorably known, that we need not speak at length of its merits. In the chapters on *Mycetozoa* the author includes *Myxomycetes*, *Acrasie*, and some doubtful forms, but excludes many amœboid forms classed by Zopf among the *Schleimpilze*. The chapters on bacteria have been to some extent replaced by the more recent 'Vorlesungen über Bacterien,' by the same author. The original, it must be admitted, is rather hard reading for foreigners, in spite of its clear scientific treatment of the subject; and all English-speaking botanists will be glad to welcome the present excellent translation, which, while preserving the sense

and spirit of the original, presents it in a form which can be much more quickly and easily absorbed, even by those who have a good knowledge of German, and are acquainted with the subject treated. American botanists will now be able to read the admirable treatise of De Bary with ease as well as with profit.

A Course of Practical Instruction in Botany. By F. O. BOWER and SYDNEY H. VINES. Part II. Bryophyta and Thallophyta. New York, Macmillan. 8°.

THE second part of the practical botany by Bower and Vines is similar in form to the first part, which appeared in 1885, and is intended to be a guide to the student who is studying botany by the type methods. The common *Polytrichum* and *Marchantia* are used as illustrations of mosses and *Hepaticæ*; but the bulk of the work is devoted to *Thallophytes*,—a group which does not lend itself to popular treatment in a short space, for the types of reproduction are numerous, and the illustrations must be taken largely from plants which have no common names, in this country at least. The present volume is a valuable aid in the laboratory where the instructor prepares and selects the material, but it is not adapted to those who are obliged to pursue their studies independently of competent instructors. For the latter class of students, the chapters on *Thallophytes* are, as a rule, too condensed, and the absence of plates necessarily makes the text a little obscure for beginners.

The Making of the Great West. By SAMUEL ADAMS DRAKE. New York, Scribner. 12°.

THIS is a thoroughly commendable volume. It is constructed on the same general plan as 'The Making of New England,' by the same author, though dealing with a far larger and more complex subject.

It is too often the case that brief histories of the United States are written so entirely from an Atlantic coast standpoint that the great territory west of the Mississippi receives scant treatment at the authors' hands. Mr. Drake's plan of treating the various sections separately avoids this lack of proportion, and affords an opportunity of bringing the important facts in the history of each section into the prominence which properly belongs to them. In this volume the author makes three subdivisions. In the first we find a lucid and well-illustrated account of the planting of the Spanish, French, and English civilizations on this continent. In the second the territory acquired by the Louisiana purchase is treated, and then follows the story of the advance of civilization in the West up to the time that gold was discovered in California. The third section completes the story from 1848. Mr. Drake's conception of history is that of the late John Richard Green, and his narrative is accompanied with excellent sketches of the aboriginal and conquering civilizations. For that reason, as well as because of its pleasant style, 'The Making of the Great West' would be a valuable reading-book for grammar and high-school use.

Three Good Giants, whose Famous Deeds are recorded in the Ancient Chronicles of François Rabelais. Compiled from the French by JOHN DIMITRY. Boston, Ticknor. 12°.

IN this volume the works of the old French humorist are presented in an expurgated form, and profusely illustrated by Gustave Doré and A. Robida. The result is a book for children; but what its value in that respect may be, can only be determined by experience. There is certainly not much in it that is interesting to grown-up people, the humor of it being so extravagant that it often ceases to be humor. Children's tastes, however, are different, and with them the book may become a favorite. Such attempts to preserve what is best in old writers are in themselves praiseworthy; for the world is not so rich in good literature that it can afford to part with any of it. The illustrations, which are of the same fantastic type as the story itself, will add to the attractiveness of the book.

A Collection of Letters of Thackeray. New York, Scribner. 8°.

THE series of letters from Thackeray to Mr. and Mrs. Brookfield, which were lately published in *Scribner's Magazine*, are here offered in book form. They were written between the years 1847 and 1855, after the death of Mrs. Thackeray, and when their author was in the full flush of early fame. They show him in various moods, the humorous predominating, of course, yet oftentimes with

an undertone of melancholy which enhances their interest. That he enjoyed his fame at first, and the social entertainments it brought him, is manifest; and yet in one of the latest letters of the series, written from Philadelphia, he declares that he doesn't care any more for praise, or for abuse, or for reputation of a literary sort. For the rest, the letters reveal the same qualities of mind and character that his novels exhibit, with perhaps a little more tenderness as he unbosoms himself to his friends. There is the same smooth and brilliant style, the same satirical wit and badinage, the same keen eye for the superficial elements of life, and, it must be added, the same apparent inability to see any thing deeper. Only once or twice, as on pp. 35 and 95, does he strike a deeper vein; and one cannot help wondering whether he did not care for such things, or whether he did not venture to say what he thought about them. The letters are certainly very interesting, and will doubtless long continue to be favorites with readers of English literature.

NOTES AND NEWS.

THIS year is remarkable for the number of accidents in the Swiss Alps. It is stated by a Swiss newspaper that the season's death-roll is an unusually heavy one. In the short space of not quite a month twenty-two tourists met with accidents, of whom eighteen were killed. The accident on the Jungfrau (canton of Bern) involved the loss of six lives; that on the Falkniss (Granbündten), three. One life was lost in each case in the accidents on the Morteratsch glacier (Granbündten), Molesa (Waadt), Gantrist (Bern), Leissigergrat (Bern), Säutis (Appenzell), Kaisereck (Freiburg), Dent de Corjan (Waadt), Schächenthal (Uri), and Diablerets (Wallis). There were no guides among the eighteen killed, and only too many persons make ascents without guides. The four injured persons were all tourists.

—Although automatic telegraphy has long been known, says the *London Times*, it has not, so far as we are aware, proved a commercial success, owing to the circumstance that the instruments used in conducting it are expensive, the system slow, and the synchronism unreliable. In this system the messages are first written with insulating ink on tinned paper, and fed into instruments whereby they are transmitted. At the other end they are received on chemically prepared paper, but the messages soon fade. A very pronounced improvement upon this system was made by Mr. E. A. Cowper, C.E., some few years since, in his writing-telegraph. Here the movement of a pen at the sending-station introduced varying resistances into two electric circuits connected with the receiving-station. The varying currents acted upon two electro-magnets at the latter station, and caused them to impart movements in two directions at an angle to each other to a receiving-pen, which was made to reproduce the writing formed by the sending-pen. Mr. Cowper, however, was not alone in his invention of the writing-telegraph, for, as not unfrequently happens, another diligent worker was busy in the same direction and at the same time. This was Mr. J. Hart Robertson, an American electrician, who, without being aware of Mr. Cowper's invention, produced an instrument upon the same plan. He found, however, that it involved heavy expense in operating, and, pushing his research further, he in course of time produced an improved instrument. This is the writing-telegraph which we recently saw in successful operation in the American Exhibition. The principle involved consists in changing the strength of the electric currents by the movements of the pen when writing, varying the pressure on a series of carbon disks included in the circuits. By this means simplicity, greater speed, and the utmost accuracy in reproduction, are secured. In this apparatus the transmitter consists of two series of carbon disks placed at right angles to each other in a hard-rubber receptacle. Each pile of disks has a screw follower for adjusting the normal pressure of the disks on each other. A rod carrying the pen or stylus is pivoted at its lower end, and has pressure-points opposite the piles of disks. The operator manipulates the stylus or pen as in writing, although he can only move the point of the stylus over a small circumscribed area. As the stylus describes the various letters, the pressure-points are pressed against the carbon disks; and as this pressure is increased or diminished, varied currents are sent into the lines to the receiving-magnets, which cause the receiving-pen to reproduce every

movement of the pen of the writer at the transmitting-station. The receiving-instrument consists of two electro-magnets set at right angles to each other. At the point where the poles would reach if extended is a rod for carrying the armatures. Near where the rod is pivoted at the bottom a spring wire is inserted, so that its armatures can easily and quickly respond to the varying attraction of the electro-magnets. The armature rod extends above the table, and carries the recording-pen. Each machine is both a sender and a receiver, and the working of the system is most simple. The operator at the sending-station uses the stylus as a pen to form imaginary letters, words, and sentences: in short, to write. He sees the writing produced by the recording-pen in ink on a slip of ordinary paper ribbon which slowly passes before his eyes. At the receiving-end the operator sees precisely the same thing going on, for the written message is being reproduced by the little pen, line for line, in perfect facsimile, on a slip of paper passing before him. We thus have a really beautiful system of written messages, and one which is already working commercially in the United States, where it is taking the place of the telephone with marked success. Instead of the repeated shouting and comparative publicity of the telephone, the message is written by the sender and the visible answer received in perfect quiet. But should the surroundings be noisy, it matters not, for the little pen silently writes away regardless of noise of any kind. The writing at both ends has all the characteristics of the writing of the sender, and the message constitutes a record which cannot be disputed, and is therefore invaluable to business-men. There is a facsimile record at each end, and neither of them can be altered without detection. The invention is at once ingenious and practical, and is the completed expression of the long-cherished desire to produce a writing-telegraph.

—On a part of Sir Joseph Banks's Museum, at the back of 22 Soho Square, being pulled down, in a recess with doors which had not been opened for about half a century, a very interesting collection of relics of Captain Cook's voyages in the South Seas has been discovered. Inside the panelling the following inscription was written in the handwriting of Sir Joseph Banks, who accompanied Captain Cook on his travels: "Instruments used, carvings, weapons, and heads, collected by Captain Cook during the voyage of the 'Endeavour.' — J. BANKS." These relics have been bought by Sir Saul Samuel, the agent-general for New South Wales, and will shortly be despatched by him to Sydney for the State House Museum at that place. Among the collection are the following interesting articles: old quadrants and other instruments used by Captain Cook on board the 'Endeavour,' four of which are in oak cases; two mummied tattooed heads of New Zealand chiefs; two native models of New Zealand canoes, one carved; two large carved canoe-paddles; carved spears and war-clubs; a native chief's paddle, beautifully worked with idolatrous carving; a very fine stone hatchet with handle, and upon it the following inscription in the handwriting of Sir Joseph Banks, "Brought to England in 1775 by Captain Cook from Otaheite;" and a wooden bowl with lip, used for handing round human blood in the days of cannibalism. There is also a carved wooden sceptre with the following words scratched on it, presumably by Captain Cook: "Made for me by Wanga. — J. C." Sir Joseph Banks's handwriting can be identified.

—As a result of his experiments on the maxillary palpi of mandibulate insects, myriapods and female spiders, Plateau comes to the conclusion that in the arthropods they subserve no functional purpose whatever, and are to be looked on as organs which have become useless, like the mammae of male mammals. Plateau also discovers by experiment that not the slightest trace exists of any visible external respiratory movements in arachnids, such as Blanchard describes, or in chilopod *Myriapoda*, and suggests that the action must be wholly intrapulmonary, supporting himself partly by some observations of MacLeod, who thought he had discovered evidences of muscular tissue between the pulmonary lamellae. Locy, however, was unable to discover signs of it in the young.

—Dr. Mercier is about to publish, as an introduction to the scientific study of insanity, a work on the nervous system and the mind. It will contain an exposition of the new neurology as founded by Herbert Spencer and developed by Hughlings Jackson; an account of the constitution of mind from the evolutionary stand-